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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,600	10/17/2003	Michael Howard Leary	10021234-1	2258

7590 01/31/2006

AGILENT TECHNOLOGIES, INC.
Legal Department, DL 429
Intellectual Property Administration
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Loveland, CO 80537-0599

EXAMINER

NGUYEN, PHILLIP

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/688,600

Applicant(s)

LEARY ET AL.

Examiner

Phillip Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-21 is/are rejected.
- 7) ☒ Claim(s) 6-9, 22 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/17/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Response to Restriction, filed 1/05/2006, with respect to claims 1-23 have been fully considered and are persuasive. The Restriction has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 10, and 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Major et al. ('123).

With respect to claims 1 and 18, Major discloses a light-emitting device, comprising an active region configured to generate light in response to inject charge; and a tunnel junction located to inject charge into the active region and including an n-type tunnel junction layer of a first semiconductor material, a p-type tunnel junction layer of a second semiconductor material and a tunnel junction between the tunnel junction layers, the first semiconductor material including gallium (Ga), nitrogen (N), arsenic (As) and a Group VI dopant (col. 5, lines 66-67 and col. 6, lines 1-4).

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With respect to claims 4 and 19, Major discloses the dopant being in Group VI which is selenium (Se). (See column 6, lines 1-4.)

With respect to claims 5 and 20, when $x = 0$, the first semiconductor material will become GaAsN which is the same material as claimed in claim 1; therefore the claim is rejected along with claim 1.

With respect to claim 10, since Major discloses the product with the same material being used in the tunnel junction with an active layer, it is inherent that the device can be capable of producing the wavelength between 620 nm and 1650 nm.

With respect to claim 21, Major discloses the both tunnel junction layers are made of the same material except dopants. In this case, the second semiconductor material comprises GaAsN.

With respect to claims 12-17, it is inherent product by process for performing a method as recited in the claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Major et al. ('123) in view of Kneissl et al. ('013). Major discloses the claimed invention except for the

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arrangement of the tunnel junction layers with respect to the active layer. Kneissl discloses a light-emitting device as shown in Fig. 2 with an active layer 212, p type tunnel junction layer 216 and n type tunnel junction layer 218 with a tunnel junction in between. For the advantageous benefit of the light emitting device, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide the p type tunnel junction layer between the active layer and the n type tunnel junction layer as taught by Kneissl or the other arrangement depending on the structure of the light emitting apparatus.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Major et al. ('123) in view of Johnson et al. ('293). Major discloses the claimed invention except for the second material comprising at least one of indium, antimony, and bismuth. Johnson discloses a light emitting device as shown in Fig. 1 with a tunnel junction 14 with material including InAlGaAs and InP. For the improvement of the tunnel junction structure or light emitting device, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide indium as taught by Johnson to Major because the material having indium has been well known in the art for tunnel junction layer.

Allowable Subject Matter

4. Claims 6-9, and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Communication Information

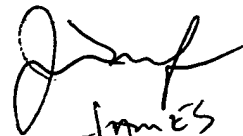
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JAMES
NEWFESS